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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/019,180	06/27/2002	Ian D. Kimber	EEC-TWUL-P2	1348

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EXAMINER

WACHSMAN, HAL D

ART UNIT	PAPER NUMBER
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2857

DATE MAILED: 12/15/2003

Please find below and/or attached an Office communication concerning this application or proceeding.



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ART UNIT	PAPER
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9

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Commissioner for Patents

Hal D Wachsman  
Primary Examiner  
Art Unit: 2857

**Office Action Summary**

Application No.

10/019,180

Applicant(s)

KIMBER ET AL.

Examiner

Hal D Wachsman

Art Unit

2857

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 June 2002.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 June 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. §§ 119 and 120**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6. 6) ☐ Other: \_\_\_\_\_

1. The drawings are objected to by the Draftspersons for the reasons stated on the PTO-948 form. Appropriate correction is required.
2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the method and apparatus for detecting and locating a common signal within two input signals using correlation based techniques as well as the method and apparatus for detecting and locating leaks in a fluid carrying pipe using correlation based techniques must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

3. The specification is objected to because there is no Brief Description of the Drawings. Appropriate correction is required.

The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

#### **Arrangement of the Specification**

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)),

and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or

REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a).

"Microfiche Appendices" were accepted by the Office until March 1, 2001.)

(e) BACKGROUND OF THE INVENTION.

(1) Field of the Invention.

(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.

(f) BRIEF SUMMARY OF THE INVENTION.

(g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).

(h) DETAILED DESCRIPTION OF THE INVENTION.

(i) CLAIM OR CLAIMS (commencing on a separate sheet).

(j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

(k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

4. The Abstract is objected to because there is some ambiguity as the abstract is worded with respect to how the analysis of the phase results in the providing of at least one filter. In addition, line 3 of the abstract states "in put signals" and "analyzed o provide" which it appears should be "input signals" and "analyzed to provide". Appropriate correction is required.

5. The last paragraph on page 8 of the specification states that Figures 1 and 2 show a first input signal 1 and a second input signal 2. However, in Figure 1 there is a reference numeral 1 that is pointing to a blank space in the drawing and there is no reference numeral 1 in Figure 2. In addition, in Figure 1 there is no reference numeral 2 and in Figure 2 there is a reference numeral 2 pointing at blank space in the graph. This same paragraph in the specification also refers to a phase confidence filter 3 and an automatic band filter 4. However, in Figures 1 and 2, reference numeral 4 is pointing at

blank space in these figures and 3 is pointing at a portion of the waveform. Appropriate correction is required.

6. Claims 1, 2, 5, 7, 13, 14, 17 and 19 are objected to under 37 C.F.R. 1.75(i) because each element or step of these claims are not separated by a line indentation. Appropriate correction is required.

***Claim Rejections - 35 USC § 112***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 1-24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The preamble of claim 1 cites "A method for detecting and locating a common signal within two input signals using correlation based techniques..." however the body of the claim does not clearly indicate, as written at the end, the location of the common signal as first set forth in the preamble of the claim. This same type of problem also occurs in claim 13. Claim 1, line 2, cites "using correlation based techniques, which is vague to exactly which techniques are being referred to here. This same type of problem also occurs in claim 2, lines 1-2, claim 13, line 2, claim 14, lines 1-2. Claim 1, lines 2-4, cites "providing at least one filter by analyzing the phase of the input signals in the frequency domain" which as worded creates ambiguity with respect to exactly how

an analysis of the phase results in the providing of at least one filter. This same type of problem also occurs in claim 2, lines 3-4, claim 13, lines 3-4, claim 14, lines 4-5. The preamble of claim 2 cites "A method for detecting and locating leaks in a fluid carrying pipe using correlation based techniques" however the body of the claim does not clearly indicate as written at the end that the leaks have been located. This same type of problem also occurs in claim 14. Claim 5, lines 2-3, cite "selecting at least one section from each of the two input signals" however exactly what type of section is being referred to here ? This same type of problem also occurs in claim 7, lines 2, 3, claim 17, lines 2, 3, claim 19, lines 2, 3. The last 2 lines of claim 5 cite "the vector sum" however the antecedent basis is "average vector sum". This same type of problem also occurs in claim 7, line 6, claim 17, line 6, claim 19, line 6. The last line of claim 6 cites "its Fourier Transform" however the use of the pronoun "its" adds vagueness with respect to exactly what possesses the Fourier Transform. This same type of problem also occurs in claim 18, line 5.

Claim 8, lines 2-3, cite ""...calculating the time delay between the common signal in the input signals..." but between the common signal and what else here ? Claim 11, line 2, cites "applying a digital threshold.." but a digital threshold representing what ? This same type of problem also occurs in claim 23, line 2. Claim 12, lines 2-3, cite "...a fourth filter..." which is confusing because there was not a second and third filter cited before this in claim 1. This same type of problem also occurs in claim 24, line 3. Claim 13, lines 2-3, cite "...comprising a computer including: means for providing..." however as a computer is being referred to here there is no indication in the claim that

the various means cited are software program means being executed on the computer. This same type of problem also occurs in claim 14. Claim 22, line 2, cites "a third filter" which is confusing because there was not a second filter cited in claim 13.

***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Raptis (4,402,230).

As per claim 1, Raptis (Abstract, figure 7, col. 2 lines 58-62, 65-68, col. 3 lines 1-7, col. 5 lines 55-58) discloses "providing at least one filter by analyzing the phase of the input signals in the frequency domain". Raptis (Abstract, figure 7, col. 5 lines 49-68) discloses the "filtering the input signals in the frequency domain using said at least one filter". Raptis (see at least abstract) discloses "performing crosscorrelation of the filtered signals".

As per claim 2, Raptis (see at least abstract) discloses "detecting two input signals from the fluid carrying pipe". Raptis (Abstract, figure 7, col. 2 lines 58-62, 65-68, col. 3 lines 1-7, col. 5 lines 55-58) discloses "analyzing the phase of the input signals in the frequency domain to provide at least one filter". Raptis (Abstract, figure 7, col. 5



lines 49-68) discloses the "filtering the input signals in the frequency domain using the at least one filter". Raptis (see at least abstract) discloses "performing crosscorrelation of the filtered signals".

As per claim 3, Raptis (Abstract, col. 3 lines 24-28) discloses the feature of this claim.

### ***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

12. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raptis (4,402,230) in view of Pedersen et al. (5,680,337).

As per claim 4, Pedersen et al. (Abstract, col. 1 lines 43-47, col. 8 lines 21-28) teach the feature of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Pedersen et al. to the invention of Raptis as specified above because as taught by Pedersen et al. (col. 3 lines 6-9) it would maximize model performance by de-emphasizing or eliminating portions of the error signal caused by system output signal portions which the model cannot cancel or control.

13. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raptis (4,402,230) in view of Aussel (5,035,144).

As per claim 12, Aussel (col. 1 lines 15-32, col. 4 lines 39-51, col. 7 lines 14, 15) teaches the feature of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Aussel to the invention of Raptis as specified above because as taught by Aussel (col. 4 lines 42-45) frequency dispersion can cause discontinuities in phase propagation times.

14. Claims 13, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raptis (4,402,230) in view of Lander et al. (5,974,862).

As per claim 13, Raptis (Abstract, figure 7, col. 2 lines 58-62, 65-68, col. 3 lines 1-7, col. 5 lines 55-58) discloses " means for providing at least one filter by analyzing the phase of the input signals in the frequency domain". Raptis (Abstract, figure 7, col. 5 lines 49-68) discloses the "means for filtering the input signals in the frequency domain using said at least one filter". Raptis (see at least abstract) discloses " means for performing crosscorrelation of the filtered signals". It appears though that

Raptis does not clearly disclose the use of a computer. However, Lander et al. (Abstract, figures 4, 9) teach this excepted feature. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Lander et al. to the invention of Raptis as specified above because Raptis (see at least abstract) is measuring flow velocities in a pipeline using cross-correlation and the invention of Lander et al. which also uses cross-correlation techniques would be of use in the detection of leaks in that same pipeline.

As per claim 14, Raptis (see at least abstract) discloses "detectors for detecting two input signals from the fluid carrying pipe". Raptis (Abstract, figure 7, col. 2 lines 58-62, 65-68, col. 3 lines 1-7, col. 5 lines 55-58) discloses " means for analyzing the phase of the input signals in the frequency domain to provide at least one filter". Raptis (Abstract, figure 7, col. 5 lines 49-68) discloses the "means for filtering the input signals in the frequency domain using the at least one filter". Raptis (see at least abstract) discloses " means for performing crosscorrelation of the filtered signals". It appears though that Raptis does not clearly disclose the use of a computer. However, Lander et al. (Abstract, figures 4, 9) teach this excepted feature. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Lander et al. to the invention of Raptis as specified above because Raptis (see at least abstract) is measuring flow velocities in a pipeline using cross-correlation and the invention of Lander et al. which also uses cross-correlation techniques would be of use in the detection of leaks in that same pipeline.

As per claim 15, Raptis (Abstract, col. 3 lines 24-28) discloses the feature of this claim.

15. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raptis (4,402,230) in view of Lander et al. (5,974,862) as applied to claim 13 above, and further in view of Pedersen et al. (5,680,337).

As per claim 16, Pedersen et al. (Abstract, col. 1 lines 43-47, col. 8 lines 21-28) teach the feature of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Pedersen et al. to the inventions of Raptis and Lander et al. as specified above because as taught by Pedersen et al. (col. 3 lines 6-9) it would maximize model performance by de-emphasizing or eliminating portions of the error signal caused by system output signal portions which the model cannot cancel or control.

16. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raptis (4,402,230) in view of Lander et al. (5,974,862) as applied to claim 13 above, and further in view of the Applicant's Admissions of the prior art.

As per claim 22, the Applicant's Admissions of the prior art (page 3, lines 15-18, of the specification) teach the feature of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the Applicant's Admissions of the prior art to the inventions of Raptis and Lander et al. as specified above because background noise can contain frequencies which do not have sufficient amplitude and should be removed.

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17. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Raptis (4,402,230) in view of Lander et al. (5,974,862) as applied to claim 13 above, and further in view of Aussel (5,035,144).

As per claim 24, Aussel (col. 1 lines 15-32, col. 4 lines 39-51, col. 7 lines 14, 15) teaches the feature of this claim. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to apply the techniques of Aussel to the inventions of Raptis and Lander et al. as specified above because as taught by Aussel (col. 4 lines 42-45) frequency dispersion can cause discontinuities in phase propagation times.


18. The following references are cited as being art of general interest: Rademacher which discloses an acoustic leak-detection system using cross-correlation, Veneruso et al. which disclose a cross correlation fluid flow meter, Dixon et al. which disclose measuring flow using frequency-dispersive techniques and Allen which discloses method and apparatus for detecting leaks in pipelines using cross-correlation techniques.

19. No claims are allowed.

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hal D Wachsman whose telephone number is 703-305-9788. The examiner can normally be reached on Monday to Friday 7:00 A.M. to 4:30 P.M..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marc Hoff can be reached on 703-308-1677. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

  
Hal D Wachsman  
Primary Examiner  
Art Unit 2857

HW  
December 11, 2003